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REMARKS

In the Non-Final Office Action of December 15, 2005, claims 1-19 are pending. Claim 20 is cancelled. Claims 1, 8 and 15 are independent claims from which all the other remaining claims depend therefrom.

Title

The Examiner has objected to the original title, "An Improved Side Airbag." In response, the title has been amended to "Side Airbag."

Claim Objections

The Examiner has objected to Claim 9 because she states that it depends from claim 7. According to our records from the original electronic filing completed on November 17, 2003, Claim 9 does correctly depend from claim 8. Therefore, claim 9 has not been amended because our records do not indicate that there is a reference to claim 7, as the Examiner points out.

Drawings

A New Sheet 6 has been added including new Figure 7. Figure 7 illustrates an alternative embodiment in accordance with the teachings of the present invention where the pelvis-pushing chamber 134 is smaller in volume than the thorax-cushioning chamber 132 of the side airbag. The specification has also been amended to include an explanation of new Figure 7.

Further, the descriptions of Figures 3 and 4 have been amended to more accurately reflect their illustrations. Their descriptions, as originally submitted, were transposed.

Claim Rejections – 35 USC § 112

Claims 18 is rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject

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matter which Applicants regard as the invention. In claim 18 "said second chamber" lacks antecedent basis. Claim 18 has been amended to depend from claim 16 and therefore overcomes this rejection and is now in condition for allowance.

Claim Rejections – 35 USC § 102

Claims 1-6, 8-13 and 19

Claims 1-6, 8-13 and 19 are rejected under 35 USC 102(e) as being anticipated by Kumagai et al. US 2003/0160433 A1 (hereinafter referred to as "Kumagai et al.") Kumagai et al. teach a side airbag having two chambers that each receive a gas wherein "the first chamber 1a and the second chamber 1b are not substantially communicated with each other." Kumagai et al., paragraph [0017]. The design of the Kumagai patent allows for gas to flow between the first chamber and the second chamber through the gas distributor 4. This is clearly visible in Figure 4. As illustrated the gas exits from the gas generator 3 through gas jets or outlets 5. It then enters into a gas distributor 4 that has two separate outlets 4a and 4b that enter into the lower and upper chambers respectively. This design allows for the gas to flow between the two chambers through the gas distributor 4.

However, the present invention prevents the gas from flowing between the two compartments through the Applicants' manifold. As illustrated in Figure 3 and as explicitly stated in paragraph [0029] of Applicants' specification, "[t]hese openings and the continuous injection of gas prevents the gas from back-flowing from one chamber through the intake manifold 24 into another chamber. In this respect, the pelvis-pushing portion 18 can be compressed without causing gas to flow from the second chamber 34 through the intake manifold 24 into the first chamber 32 and thereby increase the stiffness of the thorax-cushioning portion 16."

To further distinguish between the two designs, in Kumagai et al.'s design the gas flows through the gas jet outlets 5 and into a chamber created by the gas

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distributor 4 before exiting through the two separate outlets 4a and 4b. On the other hand, in the design of the present invention the gas flows directly out of the gas generator and through the set of openings 38 and 40 into either the upper or lower chamber. There is no equivalent gas distributor 4 as disclosed in Kumagai et al.

Claim 1 has been amended to more explicitly describe the design of the gas manifold and the flow of the gas due to the Applicants' manifold design as distinguished from Kumagai et al. Therefore, Applicants respectfully submit that claim 1 is not anticipated by Kumagai et al. and is therefore in condition for allowance.

Claims 2-6 are all dependent on amended independent claim 1. Amended claim 1 includes structure not disclosed in Kumagai, specifically that the gas is prevented from back flowing through the manifold between the chambers. Therefore, Applicants respectfully submit that dependent claims 2-6 are not anticipated by Kumagai et al. and are in condition for allowance.

Claim 8 is an independent claim and has been amended to include structure that distinguishes Applicants' invention from Kumagai et al. Similar to claim 1, claim 8 has been amended to include the inflator manifold having two sets of openings where the gas flows directly from an inflator device and through either the first set of openings directly into the thorax-cushioning portion or through the second set of openings directly into the pelvis-pushing portion and further that the gas is prevented from back-flowing from one portion through the inflator manifold into the other portion. Whereas Kumagai et al. allows for gas to flow between the two portions of the side airbag through its gas distributor.

Claims 9-13 are all dependent on amended independent claim 8. Amended claim 8 includes structure not disclosed in Kumagai, specifically that the gas is prevented from back flowing through the manifold between the chambers. Therefore, Applicants respectfully submit that dependent claims 9-13 are not anticipated by Kumagai et al. and are in condition for allowance.

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Claim 19 has been amended to depend from claim 16 instead of claim 10. Claim 19 is ultimately dependent from independent claim 15. Therefore, since claim 19 depends from claim 15, it is not anticipated by Kumagai et al and Applicants respectfully submit that it is in condition for allowance.

Claims 1-5, 7-12, 14 and 20

Claims 1-5, 7-12, 14 and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tanase et al. (WO 02100690-Examiner is relying on US 2004/0021304 A1 for translation.) Claims 1 and 8 are independent claims. Claims 2-5 and 7 depend from Claim 1. Claims 9-12 and 14 depend from Claim 8. Claim 20 has been cancelled.

Tanase discloses a side airbag for a vehicle having an "upper chamber and a lower chamber . . . each inflated by a discharging gas and an impact reducing means for reducing the impact applied to a passenger when the air bag contacts the passenger in the seat during inflation of the air bag." Tanase, claim 1. As explicitly defined in the patent, the impact reducing means "includes a communication means for communicating the upper chamber to the lower chamber." Tanase, claim 5. Therefore, Tanase requires that there be communication between the contents of the upper chamber and the lower chamber.

Most of the embodiments of Tanase disclose a connector 16 that defines an upper chamber 12a and a lower chamber 12b. Tanase, paragraph [0059]. "The connector 16 is generally V-shaped and located near the middle of the surface of the air bag 12 that opposes the sidewall of the vehicle when the air bag 12 is inflated. A front passage 30 having a predetermined length is formed between a first end of the connector 16, which is located at the forward side of the vehicle, and the inner surface of the air bag 12. A rear passage 31 having a predetermined length is formed between a second end of the connector 16, which is located at the rearward side of the vehicle, and the inner surface of the air bag 12. The

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upper chamber 12a and the lower chamber 12b are in communication with each other through the front and rear passages 30 and 31. Each of the front and rear passages 30 and 31, which has a cross sectional area that is gradually reduced from the lower end to the upper end when the air bag 12 is inflated, functions as a throttling passage. Tanase, paragraph [0061]. This design is very clearly different from the Applicant's invention that requires no communication between the upper and lower chambers of the air bag.

In another embodiment disclosed in Tanase and illustrated in Figure 16 a connector 341 completely defines the upper chamber 312a and the lower chamber 312b. In this embodiment the connector 341 includes a separating portion 341, which serves as a communication means and is separated from the base fabric of the air bag 312 when the internal pressure of the lower chamber 312b exceeds a predetermined value. Tanase, paragraph [0136]. "In this structure, the upper chamber 312a and the lower chamber 312b come into communication with each other and to release the gas in the lower chamber 312b into the upper chamber 312a when the internal pressure of the lower chamber 312b exceeds a predetermined value. Therefore, when there is no obstacle on the seat, the internal pressure in the lower chamber 312b increases promptly to further increase the inflation speed of the air bag 312. In addition, when the internal pressure in the lower chamber 312b exceeds a predetermined value due to one reason or another, the separating portion 342 is separated from the base fabric of the air bag 312 and the gas in the lower chamber 312b is instantaneously released into the upper chamber 312a." Tanase, paragraph [0137].

These requirements disclosed in Tanase teach away from the teachings of the present invention requiring that "the gas flow directly from an inflator device . . . through either said at least one first opening directly into the thorax-cushioning portion or through said at least one second opening directly into the pelvis-pushing portion and the gas is prevented from back-flowing from one portion through said intake manifold into the other portion." Present Invention, claim 1.

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Amended claims 1 and 8 include structure not disclosed in Tanase, specifically that the gas is prevented from back flowing through the manifold between the chambers. Therefore, Applicants respectfully submit that independent claims 1 and 8 and all claims dependent from them, claims 2-5, 7, 9-12, 14, are not anticipated by Tanase et al. and are in condition for allowance.

Alternatively, the Examiner takes Official Notice that is known with side air bags mounted in seats to supply pressure to the top and bottom chambers such that bottom chamber is more highly pressurized than the top, and as such stiffer, so that the side airbag protects the occupant appropriately based on the biomechanics of the thorax and pelvis. Whether this is true or not is irrelevant since none of the references teach or suggest the provision of preventing the contents of the upper and lower chambers from communicating with each other, or by preventing the gas from back-flowing from one chamber to the other chamber through the inflator manifold.

Claims 1-5 and 7-12

Claims 1-5 and 7-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Acker et al., US 6,349,964 (hereinafter referred to as "Acker et al.") Acker et al. discloses a side airbag having a design very similar to Kumagai et al. Acker et al. discloses a side airbag having two separate chambers 20, 22 that are divided by a seam 24, a compressed gas source 16 from which the gas travels through outflow openings 38. Similar to Kumagai et al. the gas then enters into a prechamber 40 prior to exiting from either a set of first inflow openings 42 into chamber 20 or through a set of second inflow openings 44 into chamber 22. Similar to Kumagai et al. this design allows for the possibility of back flow of gas between the two chambers through the prechamber 40.

This design differs from the Applicants' present invention because the Applicants' invention discloses that the gas travels directly from the gas generator through either a first or second set of openings into either the upper or lower chamber and back flow of the gas between the two chambers is prevented.

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Independent claims 1 and 8 have been amended to clarify that the design does not allow for the gas to flow between the upper and lower chambers through the manifold. Therefore, Applicants respectfully submit that Claims 1 and 8 and all claims dependent from them are not anticipated by Acker et al. and are therefore in condition for allowance.

Claim Rejections – 35 USC § 103

Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kumagai et al. (US 2003/0160433) in view of Wipasuramonton et al. (US 6,270,113 B1). For the reasons stated above, Applicant's claims have been amended to further distinguish its design from Kumagai et al.

Wipasuramonton et al. disclose a side airbag that utilizes a tube 36 panel to distribute gas from a gas generator to the upper 22 and lower 24 chambers of the side airbag. Similar to all of the other references cited by the Examiner, this reference also requires that the gas travel from an inflator 40, which is "positioned within the lower portion of the tube", out into the tube and then into either the upper or lower chamber of the airbag. This design allows for the contents of the upper and lower chambers to communicate with each other. In other words, it allows for backflow between the two chambers.

On the other hand, Applicants' disclosure explicitly requires that backflow between the upper and lower chambers be prevented. Amended claim 15 discloses "an intake manifold having at least one first opening within said thorax-cushioning portion and at least one second opening within said pelvis-pushing portion, wherein gas flows directly from an inflator device and through either said one first opening directly into said thorax-cushioning portion or through said one second opening directly into said pelvis-pushing portion and the gas is prevented from back-flowing from one portion through said intake manifold into the other portion."

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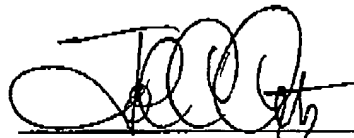
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Thus, Kumagai et al. and Wipasuramonton et al. alone or in combination fail to teach or suggest each and every element of claim 15, therefore, claim 15 is also novel, nonobvious, and is in condition for allowance. Since claims 16-18 depend from claim 15, they are also novel, nonobvious and are in condition for allowance.

In light of the amendments and remarks, Applicants submit that all the objections and rejections are now overcome. The Applicants have added no new matter to the application by these amendments. The application is now in condition for allowance and expeditious notice thereof is earnestly solicited. Should the Examiner have any questions or comments, he is respectfully requested to contact the undersigned attorney.

Respectfully submitted,

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